MAINE HEALTH ALERT NETWORK

Maine Department of Health and Human Services
Maine Center for Disease Control and Prevention (Maine CDC)
(Formerly Bureau of Health)
11 State House Station
Augusta, Maine 04333-0011
Phone 1-800-821-5821 / Fax 207-287-7443

ADVISORY – Important Information*

2009PHADV044

TO: All HAN Recipients

FROM: Dora Anne Mills, M.D., M.P.H., Public Health Director

SUBJECT: **Eastern Equine Encephalitis (EEE)**

DATE: September 3, 2009

TIME: 11:00 am

PAGES: 5

PRIORITY: High

Eastern Equine Encephalitis (EEE) September 3, 2009

The Maine CDC and the Maine Department of Agriculture's Animal Health and Industry Division announced today that a total of five horses in Maine have died of confirmed Eastern Equine Encephalitis (EEE) and three more are suspicious, awaiting test results. These horses are from the counties of York, Cumberland, Waldo, and Penobscot. Although the risk of contracting EEE from one mosquito bite is very small, these recent cases indicate that the risk for contracting EEE is much more widespread geographically in Maine than previously thought.

Information contained in this health advisory is on the human and equine health issues related to EEE, testing information for EEE, as well as resources related to mosquito control.

Background

EEE is a virus that is transmitted through the bite of an infected mosquito that has picked up the virus by feeding on an infected bird. The disease was first detected in Maine mammals in 2005 among two horses in York County, and was also found that year in some mosquitoes and birds in York and Cumberland Counties. The fall of 2008 a man spending time in Cumberland County and a horse from York County died of the disease. EEE is especially associated with wetland and coastal areas, and some of the recent infected horses resided near bogs and other wetlands.

Although many persons infected with EEE have no apparent illness, those who develop symptoms do so usually 3 to 10 days after the bite of an infected mosquito. Symptoms range from mild flu-like illness to encephalitis, coma, and death. About one-third of those who have symptoms of EEE die. Approximately half of those identified with EEE and who survive will have permanent neurological damage. Unlike horses, there is no vaccine available for humans. There is also no known effective treatment.

The transmission cycle of EEE among birds and mosquitoes is most common in coastal areas and freshwater swamps. Those people at most risk are:

- Residents of and visitors to endemic areas, especially near wetlands
- People who engage in outdoor work and recreational activities
- Persons over age 50 and younger than age 15 seem to be at greatest risk for developing severe disease

Steps people should take to protect themselves from EEE include:

- Using an US CDC-recommended effective insect repellent on skin and clothing such as DEET or Picaridin or an Oil of lemon eucalyptus;
- Covering up with long-sleeve shirts, pants and socks when outdoors;
- Placing mosquito netting over infant carriers when outdoors with infants;

- Limiting and even rescheduling outdoor evening activities (starting 1 hour before sunset) when the temperature is 60 degrees or more and before there are several deep frosts, especially in areas near wetlands and where EEE has been detected;

- Cleaning up unnecessary standing water around the yard to reduce mosquito habitats; and

- Vaccinating their horses annually.

*It is especially important during the next several weeks, before there are several deep frosts and while mosquitoes are still active, that if temperatures are expected to be above 60 degrees, schools and other entities serving youth and elders should ensure that their outdoor activities end before one hour prior to sunset. Schools taking trips into wetlands or areas of identified EEE at any time of day, if the temperature is 60 degrees or above, should assure parents are aware of protection measures such as insect repellent and clothes that cover up, and children have access to these measures.

Equine Health
In horses, EEE is a highly fatal disease with mortality approaching 100 percent. Infected horses can exhibit clinical signs of illness within 3-10 days of being bitten by an infected mosquito. Clinical signs include lethargy, unsteadiness, erratic behavior, head pressing, circling and a marked loss of coordination. There is no effective treatment and coma and seizures resulting in death usually occur within 48-72 hours of an animal's first indications of illness. The Maine horses have exhibited an extremely rapid progression of clinical signs from normal to recumbent and comatose within 24-48 hours. All were euthanized. In all confirmed positive cases thus far, the horses were not up to date on their EEE vaccine or had a questionable vaccination history.

Human Diagnostic Tests for WNV and EEE Infections
Clinical Suspicion: EEE infection can be suspected based on clinical symptoms and patient history. Diagnosis relies on a high index of suspicion and on results of specific laboratory tests. EEE, WNV or other arboviral infections should be seriously considered in any individual – but especially those over age 50 or younger than age 15 - who has onset of unexplained encephalitis, meningitis, or high fever in the late summer or early fall.

Laboratory Tests: Laboratory testing is required for a confirmed diagnosis. The most efficient diagnostic methods are listed below:

- Detection of IgM antibody in serum collected 3-10 days after onset of illness (note: if a specimen collected less than 10 days after onset of illness is negative, a convalescent serum should be collected and tested for IgM antibody 2-3 weeks after the first collection date).
- Detection of IgM antibody in cerebrospinal fluid collected 3 to 10 days after onset of illness (for persons with meningitis or encephalitis).

Because some other mosquito-borne and tick-transmitted infections can cause indistinguishable clinical presentations, specimens submitted for EEE and WNV testing are also tested for the virus that cause *St. Louis encephalitis* (not previously seen in Maine) . Specimens that are positive by an IgM screening test at the Maine Health and Environmental Testing Laboratory

(HETL) are sent to the federal CDC in Atlanta for confirmatory testing using the plaque-reduction neutralization (PRNT) technique. PRNT is the current gold standard for ruling out possible false positive results and in distinguishing cross-reactions that can occur between different infections.

Diagnostic testing of serum and cerebrospinal fluid for WNV and EEE infections are available free of charge through HETL. Preliminary results are usually available within 5 to 7 days. To ensure early public health identification of mosquito-borne human disease, Maine CDC requests that specimens from all patients who are being tested for WNV and EEE infection be submitted to HETL (even if specimens are also being sent to commercial laboratories).

Instructions for submitting a specimen and algorithms for testing are available at:
http://www.maine.gov/dhhs/etl/micro/submitting_samples.htm

Mosquito Control Measures
Maine CDC is working with partners to trap and test mosquitoes in to help determine the geographical scope of the risk. Although EEE has been detected along the Eastern United States for a number of years, these recent cases in Maine are the farthest north the disease has been identified in this country; there have been cases identified in Quebec. Area Maine CDC staff are also working with municipalities and some local schools to inform them of the risks and of their options for controlling the mosquito population.

In areas where EEE has been identified, either in mosquitoes or mammals, municipalities should consider implementing mosquito control strategies that include public education.

Maine resources to learn more about mosquito control include:

- Maine Vector-Borne Disease Plan and Resources for Municipalities http://www.maine.gov/dhhs/boh/ddc/epi/vector-borne/index.shtml
- University of Maine Cooperative Extension at 1-800-287-0279,
- Maine Forest Service at 207-287-2431 or http://www.state.me.us/doc/mfs/mosquito.htm,
- Board of Pesticide Control at 207-287-2731 or www.thinkfirstspraylast.org (information on pesticide regulations, licensed applicators, pesticide effects)
- Maine Department of Environmental Protection (Maine DEP) information on pesticides and wetlands at: http://www.maine.gov/dep/blwq/topic/westnile/ or 207-287-3901 or 1-800-452-1942

Other resources:
Massachusetts EEE Plan (page 69 for phased responses to EEE)
http://www.mass.gov/agr/mosquito/docs/OperationalResponsePlan.pdf

CDC Guide (page 10 for stepwise responses to EEE)
Guidelines for Arbovirus Surveillance in the United States

For more information:

- Please call the Maine CDC disease reporting and consultation line at 1-800-821-5821

- Maine CDC EEE Website http://www.maine.gov/dhhs/boh/ddc/epi/vector-borne/index.shtml
- US CDC EEE Website http://www.cdc.gov/ncidod/dvbid/arbor/eeefact.htm
- US CDC Insect Repellent Website http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect_repellent.htm
- Maine Department of Agriculture Animal Health Website http://www.maine.gov/agriculture/ahi/index.html
- US CDC "Fight the Bite" Mosquito Website http://www.cdc.gov/ncidod/dvbid/westnile/prevention_info.htm